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RESEARCH ARTICLE

Assessment of Semi-Quantitative Health Risks of Exposure to Harmful Chemical Agents in the Context of Carcinogenesis in the Latex Glove Manufacturing Industry

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Abstract

Excessive exposure to chemicals in the workplace can cause poisoning and various diseases. Thus, for the protection of labor, it is necessary to examine the exposure of people to chemicals and risks from these materials. The purpose of this study is to evaluate semi-quantitative health risks of exposure to harmful chemical agents in the context of carcinogenesis in a latex glove manufacturing industry. In this cross-sectional study, semi-quantitative risk assessment methods provided by the Department of Occupational Health of Singapore were used and index of LD50, carcinogenesis (ACGIH and IARC) and corrosion capacity were applied to calculate the hazard rate and the biggest index was placed as the basis of risk. To calculate the exposure rate, two exposure index methods and **the actual level of exposure were employed. After identifying risks, group H (high) and E (very high) classified** as high-risk were considered. Of the total of 271 only 39 (15%) were at a high risk level and 3% were very high (E). These risks only was relevant to 7 materials with only sulfuric acid placed in group E and 6 other materials in group H, including nitric acid (48.3%), chromic acid (6.9%), hydrochloric acid (10.3%), ammonia (3.4%), potassium hydroxide (20.7%) and chlorine (10.3%). Overall, the average hazard rate level was estimated to **be 4 and average exposure rate to be 3.5. Health risks identified in this study showed that the manufacturing** industry for latex gloves has a high level of risk because of carcinogens, acids and strong alkalisand dangerous drugs. Also according to the average level of risk impact, it is better that the safety design strategy for latex gloves production industry be placed on the agenda.

Keywords: Risk assessment - chemical agents - latex glove production - protection